

Two-dimensional radar imaging of field-aligned irregularities at midlatitude ionosphere with the MU radar

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Abstract

The 29-channel digital receiving subsystem of the MU radar has been utilized for 2D imaging of small-scale field-aligned irregularities (FAIs) in the E-region ionosphere since March 2004. In 2007 the same technique was applied to F-region FAIs when E-region FAIs were concurrently detected along the same geomagnetic field line with portable radar. They showed that similar band structures with wavefronts aligned northwest to southeast and with 50-km scale patchy substructure inside propagated southwestward in both regions. These results demonstrate a close coupling between E and F regions in the nighttime mid-latitude ionosphere.